

**What is claimed is:**

sub 1.  
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1. A method of qualitative respirator fit testing, the method comprising:  
providing an automated qualitative respirator fit testing system that  
comprises a plurality of test stations and an automated aerosol generator system  
5 in fluid communication with each of the test stations;

locating at least one test subject at one test station of the plurality of test  
stations; and

conducting a qualitative fit test on each test subject located at one of the  
test stations, wherein the qualitative fit test conducted at each of the test stations  
10 comprises:

delivering a test aerosol to the test station using the  
automated aerosol generator system after locating a respirator on  
the test subject, wherein the test subject is exposed to the test  
aerosol; and

15 receiving test feedback from the test subject at the test  
station after exposure to the test aerosol.

2. The method of claim 1, further comprising locating two or more test  
subjects at the plurality of test stations and conducting a qualitative fit test on  
20 each of the two or more test subjects simultaneously.

3. The method of claim 2, wherein delivering the test aerosol further  
comprises simultaneous delivery of the test aerosol to the two or more test  
subjects  
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4. The method of claim 1, wherein the automated aerosol generator system  
comprises a set of independent aerosol generators, with at least one of the  
independent aerosol generators in fluid communication with each of the test  
stations.  
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5. The method of claim 1, wherein the aerosol generator system comprises at least one aerosol generator in fluid communication with at least two of the plurality of test stations.
- 5 6. The method of claim 1, wherein providing the test aerosol further comprises delivering a selected amount of the test aerosol to each of the test subjects at predetermined intervals using the aerosol generator system.
7. The method of claim 6, further comprising delivering the selected amount  
10 of the test aerosol to each of the test subjects simultaneously.
8. The method of claim 6, further comprising delivering different selected amounts of the test aerosol to at least two of the test stations.
- 15 9. The method of claim 1, further comprising storing the test feedback in a database.
10. The method of claim 1, further comprising storing information regarding the test aerosol delivery to each of the test subjects in a database.  
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11. The method of claim 1, further comprising monitoring each of the test stations during exposure of the test subjects to the test aerosol.
12. The method of claim 1, further comprising:  
25 monitoring each of the test stations during exposure of the test subject to the test aerosol to each of the test stations;  
capturing at least one image during the monitoring;  
storing the at least one image in a database.

13. The method of claim 1, further comprising prompting the test subjects at each of the test stations to perform specified activities during exposure of the test subject to the test aerosol.

5 14. The method of claim 13, further comprising simultaneous prompting of at least two test subjects to perform the specified activities.

15. The method of claim 13, further comprising receiving activity feedback from each of the test subjects indicating completion of the specified activities.

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16. The method of claim 1, wherein the qualitative fit test performed at each of the test stations further comprises:

delivering sensitivity aerosol to the test station using the automated aerosol generator system, wherein the test subject is exposed to the sensitivity aerosol; and

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receiving sensitivity feedback from the test subject at the test station after exposure to the sensitivity aerosol.

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17. The method of claim 16, further comprising simultaneous delivery of an initial selected amount of the sensitivity aerosol to each of at least two test subjects.

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18. The method of claim 16, further comprising preventing delivery of the sensitivity aerosol to at least one test subject after receiving sensitivity feedback from the test subject indicating detection of the sensitivity aerosol by the test subject after delivering the initial selected amount of the sensitivity aerosol.

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19. The method of claim 16, further comprising storing the sensitivity feedback in a database.

20. The method of claim 16, further comprising storing information regarding the sensitivity aerosol delivery to each of the test subjects in the database.

21. A qualitative respirator fit testing system comprising:

5 a plurality of test stations; and  
an automated aerosol generator system in fluid communication with each  
of the test stations.

22. The system of claim 21, wherein the automated aerosol generator system  
10 comprises a set of independent aerosol generators, wherein at least one of the  
independent aerosol generators is in fluid communication with each of the test  
stations.

23. The system of claim 22, wherein each of the aerosol generators comprises  
15 a nebulizer.

24. The system of claim 21, wherein the automated aerosol generator system comprises at least one aerosol generator in fluid communication with at least two of the plurality of test stations.

25. The system of claim 21, wherein each of the test stations comprises a respirator fit testing hood.

26. A method of remote automated respirator fit testing comprising:  
25 providing an automated respirator fit testing system at a first location,  
wherein the automated respirator fit testing system comprises at least one test  
station and an automated aerosol generator system in fluid communication with  
each of the at least one test stations;

30     locating at least one test subject wearing a respirator at the test station of  
the respirator fit testing system at the first location; and

operating the automated respirator fit testing system from a remote location to perform a respirator fit test on the at least one test subject by delivering a test aerosol to the at least one test station using the automated aerosol generator system, wherein the at least one test subject is exposed to the test aerosol.

27. The method of claim 26, wherein operating the respirator fit testing system comprises receiving test feedback at the remote location from the test subject at the first location after exposure to the test aerosol.

28. The method of claim 27, further comprising storing the test feedback in a database.

29. The method of claim 26, further comprising storing information regarding the test aerosol delivery in a database.

30. The method of claim 26, further comprising monitoring the at least one test station while performing the respirator fit test.

31. The method of claim 26, further comprising:  
monitoring the at least one test station while performing the respirator fit test;  
capturing at least one image during the monitoring;  
storing the at least one image in a database.

32. The method of claim 26, further comprising prompting the at least one test subject to perform specified activities while performing the respirator fit test.

33. The method of claim 26, further comprising receiving activity feedback from the at least one test subject indicating completion of the specified activities while performing the respirator fit test.

34. The method of claim 26, further comprising simultaneous prompting of at least two test subjects to perform the specified activities.

5 35. The method of claim 26, further comprising:

providing a second automated respirator fit testing system at a second location remote from the first location, wherein the second automated respirator fit testing system comprises at least one test station and an automated aerosol generator system in fluid communication with each of the at least one test stations;

10 locating at least one test subject wearing a respirator at the test station of the second automated respirator fit testing system at the second location; and

operating the first and second automated respirator fit testing systems from the remote location to perform a respirator fit test on the at least one test subject located at each of the first and second automated respirator fit testing systems, wherein each respirator fit test comprises delivering a test aerosol to the at least one test station using the automated aerosol generator system, wherein the at least one test subject is exposed to the test aerosol.

15 20 36. The method of claim 35, further comprising conducting respirator fit tests using the first and second automated respirator fit testing systems at the same time.

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